WHAT IS CLAIMED IS:

1. A method of manufacturing a multi-layer circuit board, the method comprising steps of:

forming a through-hole in a resin film;

filling the through-hole with conductive paste;

drawing a circuit pattern on a surface of the resin film by injecting ink including metal particles each having a diameter in the order of nanometers from an ink injector, the circuit pattern being drawn to contact the conductive paste in the through-hole;

laminating a plurality of the resin films, each having the circuit pattern and the through-hole filled with the conductive paste; and

bonding the plurality of the resin films together by pressing the laminated resin films under heat, and sintering the circuit patterns and the conductive paste in the through-holes at the same time.

2. The method of manufacturing a multi-layer circuit board as in claim 1, wherein:

the method further includes a step of provisionally sintering the circuit pattern by heating the same, which is performed before the laminating step.

3. The method of manufacturing a multi-layer circuit board as in claim 1, wherein:

the conductive paste filling the through-hole is the same ink as the ink with which the circuit pattern is drawn; and

the through-hole is filled with the ink by injecting the ink from the ink injector.

4. The method of manufacturing a multi-layer circuit board as in claim 3, wherein:

the method further includes a step of provisionally sintering the ink with which the circuit pattern is drawn and with which the through-hole is filled, which is performed before the laminating step.

5. The method of manufacturing a multi-layer circuit board as in claim 1, wherein:

the resin film is made of thermoplastic resin.

6. The method of manufacturing a multi-layer circuit board as in claim 1, wherein:

the diameter of the metal particles in the ink is smaller than 50 nanometers.

7. The method of manufacturing a multi-layer circuit board as in claim 1, wherein:

the circuit pattern includes a resistor pattern having an electrical resistance higher than other portions of the circuit pattern, the resistor pattern being drawn with the ink by changing kinds of metal particles included therein.

8. A multi-layer circuit board comprising:

a plurality of resin films laminated and bonded together;

a circuit pattern drawn on a surface of each resin film by ink including metal particles having a diameter in the order of nanometers, the circuit pattern being sintered; and

a through-hole formed in each resin film and filled with conductive paste, the conductive paste being sintered, thereby forming a conductor electrically connecting the neighboring circuit patterns.

9. The multi-layer circuit board as in claim 8, wherein:

the conductive paste filling the through-hole is the same ink as the ink with which the circuit pattern is drawn.

10. The multi-layer circuit board as in claim 8, wherein:

the resin film is made of thermoplastic resin.

11. The multi-layer circuit board as in claim 8, wherein:

the circuit pattern includes a resistor pattern having an electrical resistance higher than other portions of the circuit pattern, the resistor pattern being drawn with the ink including metal particles that are different from the metal particles included in the ink with which other portions of the circuit pattern are drawn.